PB-214 088

NEBRASKA WATER QUALITY STANDARDS SUMMARY

Nebraska State Department of Environmental Control
Lincoln, Nebraska

March 1972

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

EP 1.2:
N27

PB 214 088

NEBRASKA

NATIONAL TECHNICAL
INFORMATION SERVICE

MARCH 1972

U.S. ENVIRONMENTAL PROTECTION AGENCY

NEBRASKA ENVIRONMENTAL CONTROL COUNCIL

NEBRASKA DEPARTMENT OF ENVIRONMENTAL CONTROL

EP 1.2: U.S. Environmental Protection Agency
General publications

N27 Nebraska water qualtiy standards summary. March, 1972. EPA and Nebraska Environmental Control Council and Nebraska Department of Environmental Control.

PREFACE

This summary is intended for use by those who have an interest in the water quality standards of the State of Nebraska.

The information contained herein has been summarized from the document entitled "Water Quality Standards Applicable to Nebraska Waters," published July 1, 1971, by the Nebraska Department of Environmental Control.

CONTENTS

	Page
Introduction	1
Water Uses	5
Water Quality Criteria	19
Implementation Plan	23
Glossary of Terms	26
Federal and State Agency Addresses	30
Index of Interstate Waters	31

Table

1. Water Quality Criteria	21-22

Figures

1. Map--State of Nebraska Major Interstate Waters	4
2. Big Blue River Basin	7
3. Cheyenne River Basin	8
4. Little Blue River Basin	9
5. Missouri River Basin	10
6. Niobrara River Basin	11
7. North Platte River Basin	12
8. Platte River Basin	13
9. Republican River Basin	14-15

Figures (cont'd.)

	Page
10. South Fork Wemaha River Basin	16
11. South Platte River Basin	17
12. White River Basin	18

Appendices

Appendix I -- Maximum Permissible Limit of Ammonia Expressed as N at Various pH Values	33
Appendix II -- Designated Trout Streams	34
Appendix III -- Diagram for the Classification of Irrigation Waters	36

SUMMARY

WATER QUALITY STANDARDS

FOR

THE INTERSTATE WATERS OF NEBRASKA

Introduction

In the Water Quality Act of 1965, Congress authorized the establishment of water quality standards for interstate (including coastal) waters. The purpose of these standards is to protect and enhance the quality and productivity of the Nation's interstate waters to serve a variety of beneficial uses, such as public water supply, recreation and protection of aquatic life, and industrial and agricultural uses. This publication summarizes the standards for the general information of the American public and Federal, State and local officials as to the uses and associated requirements for interstate waterways.

The Act, which amended the Federal Water Pollution Control Act, provided for the States to have the first opportunity to establish standards for their interstate waters, which were then subject to review and approval by the Administrator of the Environmental Protection Agency*. All of the States, the District of Columbia, and the Territories of Guam, Puerto Rico and the Virgin Islands participated in this landmark effort to set standards. In the course of establishing the standards, public hearings were held by the States and other jurisdictions noted above to give the public an opportunity to participate in setting water quality objectives and standards.

Nebraska adopted standards for its interstate waters on June 19, 1967, which were then submitted to the Department of Interior. Subsequently, certain revisions

*Prior to December 2, 1970, the Secretary of the Interior.

were made by the State in the original standards, and the Secretary of the Interior approved the standards as revised on December 19, 1968. The standards were further modified and were approved, as revised, by the Administrator of the Environmental Protection Agency on June 28, 1971.

The approved standards are thus both State and Federal standards, enforceable under the State water pollution control statutes and the Federal Water Pollution Control Act, as amended (Section 10). The major interstate waters for which standards were adopted are shown on the map in Figure 1, page 4.

The standards consist of three major components: designation of the uses which interstate waters are to serve, specification of narrative and numerical criteria to protect and enhance water quality, and specification of a plan of implementation and enforcement, which includes treatment and control requirements for municipal, industrial and other wastes discharged to or affecting interstate waters. These components are discussed in the following sections. All three are essential to a complete standards program.

The standards are now being implemented. However, there will be continuing research on water quality requirements for various beneficial uses and improved collection and evaluation of water quality data. As more information becomes available and experience with implementing the standards is gained, the standards will be refined and improved to reflect this new knowledge.

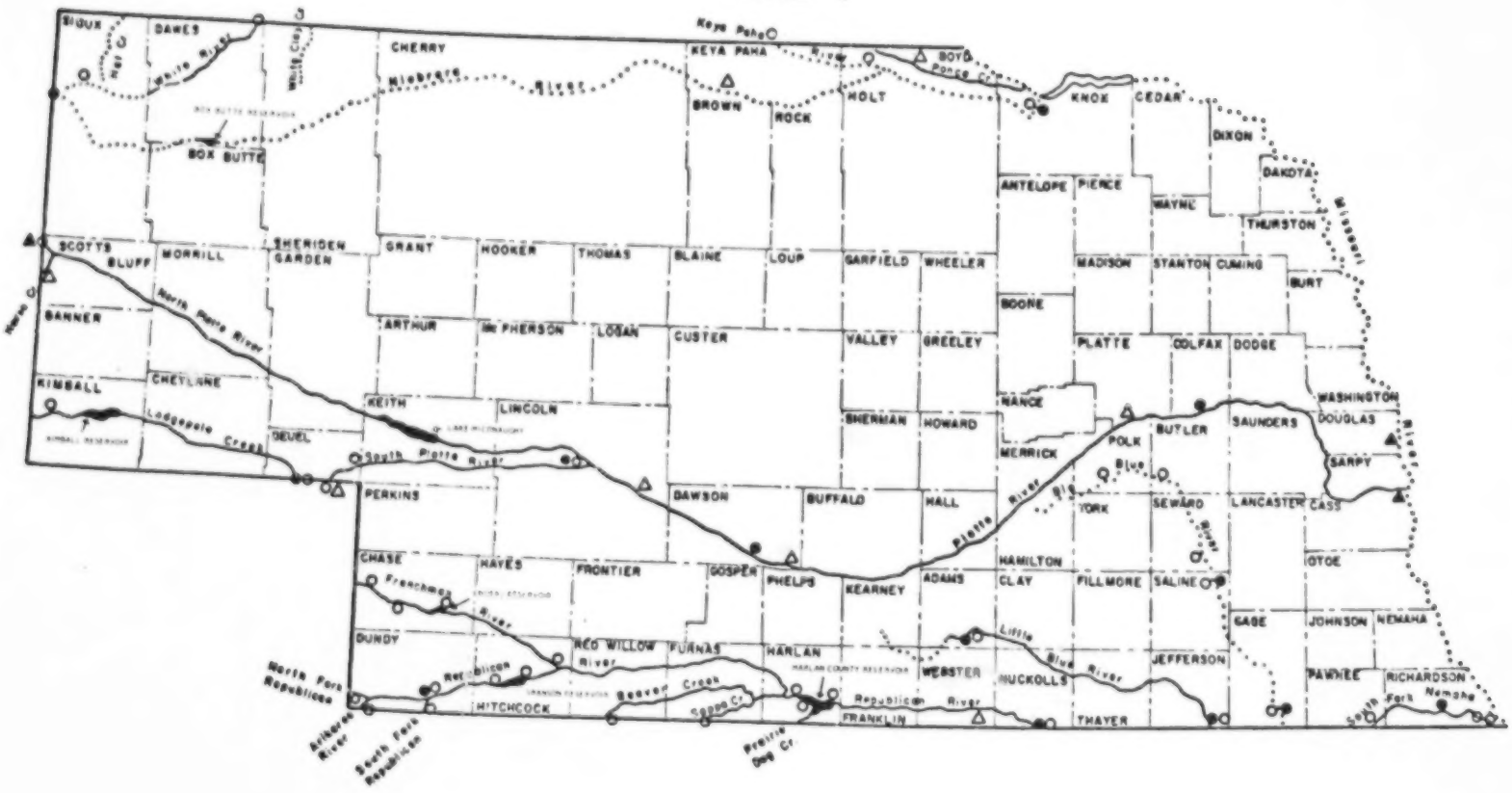
Should more detailed information be required on any aspect of the standards, it may be obtained from the Nebraska Department of Environmental Control or the Environmental Protection Agency Regional Office in Kansas City, Missouri. Nebraska has also established water quality standards for its intrastate waters, and information on these standards may also be obtained from the Nebraska Department of Environmental Control. The addresses of these offices are given on page 30.

Agencies of the State of Nebraska which have authority for water pollution control activities are:

Nebraska Department of Environmental Control	Prevention, abatement and control of new or existing water pollution
Nebraska Game and Parks Commission	Vessels and marinas.
Nebraska Soil and Water Conservation Commission	Land erosion.

The addresses of these agencies are also given on page 30.

FIGURE 1



STATE OF NEBRASKA MAJOR INTERSTATE WATERS

LEGEND:

WATER USE CLASSIFICATIONS

..... A,C

— — — B,C

——— C

△ U.S.G.S. STATION

▲ NATIONAL WATER QUALITY NETWORK STATIONS

● REGULAR NEBRASKA DEPARTMENT OF ENVIRONMENTAL CONTROL SAMPLING STATIONS

○ BASIC DEPARTMENT OF ENVIRONMENTAL CONTROL SAMPLING STATIONS

WATER USES

The State of Nebraska designates the following uses to be protected in various interstate waters:

Class A. Domestic Water Supply: Those waters of the State that are currently used for water supply and portions of other waters of the State which currently have a very high quality water. These waters can be utilized for water supply with treatment as outlined above, and those uses listed in the Class "C" category below.

Class B. Full Body Contact Sports: This shall include all water or parts thereof within or adjacent to publicly operated recreation areas and all existing reservoirs, ponds and other impoundments, excepting those designated by the Nebraska Water Pollution Control Council* as waste water lagoons. For purpose of delineating boundaries, the upstream limit(s) of an impoundment is considered to be the point in a stream bed(s) having the same elevation as a principal spillway. Full body contact criteria will protect the waters for all beneficial uses except water supply.

Class C. Agricultural, Industrial & Other Beneficial Uses: All waters not designated as water supply or full body contact sports are protected by these criteria. The quality of this water is intended to be such as to be suitable for partial body contact sports, growth and propagation of fish, waterfowl, furbearers, wildlife, and other aquatic and semiaquatic life. It is also suitable for

---

*Effective July 1, 1971, Nebraska Environmental Control Council.

agricultural use including irrigation and livestock watering, and industrial use. The aesthetic value of these waters will also be protected.

The general aim in designating uses for particular interstate waters is to recognize present uses and practicable future uses, to provide where possible for a variety of uses, and to assure compatibility of standards with Federal, State and local resource planning. In order to satisfy the intent of the Federal Water Pollution Control Act to enhance water quality, the standards specifically provide that no interstate waters may be used solely or primarily for waste assimilation. All interstate waters must be aesthetically pleasing, and this quality is usually protected by narrative criteria preventing unsightly or obnoxious conditions, such as floating debris, oil slicks, unpleasant odors, and colors.

Specific use designations for all interstate waters covered by the standards are provided in Figures 2 through 12, pages 7-18.

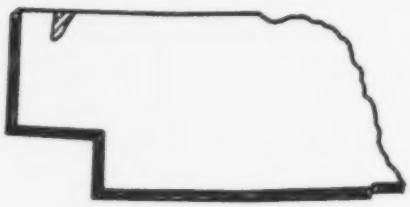
FIGURE 2

INTERSTATE WATERS AND DESIGNATED USES

INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT
Big Blue River Basin								
Big Blue River--Headwaters to Nebraska-Kansas State line.	X	X	X	X	X	X	X	

FIGURE 3

INTERSTATE WATERS AND DESIGNATED USES



INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT	
Cheyenne River Basin									
Hat Creek--Headwaters to Nebraska-South Dakota State line.	X	X	X	X		X	X	X	

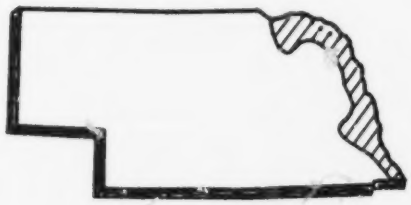
FIGURE 4

INTERSTATE WATERS AND DESIGNATED USES

INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT
Little Blue River Basin								
Little Blue River--Headwaters to confluence Cottonwood Creek.	X	X	X	X	X	X	X	
Little Blue River--Confluence Cottonwood Creek to Nebraska-Kansas State line.		X	X	X	X	X	X	

FIGURE 5

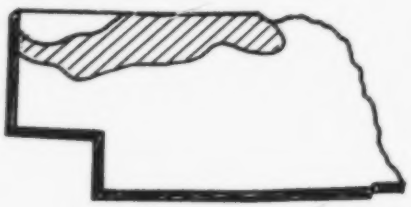
INTERSTATE WATERS AND DESIGNATED USES



INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT	
Missouri River Basin									
Missouri River--South Dakota-Nebraska State line to Nebraska-Kansas State line.	X	X	X	X		X	X	X	
Ponca Creek--South Dakota-Nebraska State line to confluence Missouri River.		X	X	X		X	X	X	

FIGURE 6

INTERSTATE WATERS AND DESIGNATED USES



INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT	
Niobrara River Basin									
Box Butte Reservoir--Impounds waters of Niobrara River.		X	X	X	X	X	X	X	
Keya Paha River--South Dakota-Nebraska State line to confluence Niobrara River.	X	X	X	X		X	X	X	
Niobrara River--Wyoming-Nebraska State line to confluence Missouri River, excluding Box Butte Reservoir.	X	X	X	X		X	X	X	

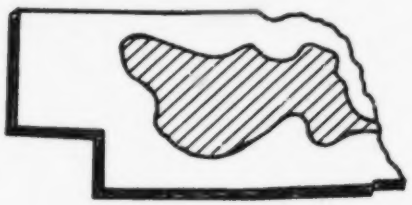
FIGURE 7

INTERSTATE WATERS AND DESIGNATED USES

INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT
North Platte River Basin								
Horse Creek--Wyoming-Nebraska State line to confluence North Platte River.		X	X	X		X	X	X
Lake McConaughy--Impounds waters of North Platte River.		X	X	X	X	X	X	X
North Platte River--Wyoming-Nebraska State line to confluence Platte River, excluding Lake McConaughy.		X	X	X		X	X	X

FIGURE 8

INTERSTATE WATERS AND DESIGNATED USES



INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT
Platte River Basin								
Platte River--Confluence South Platte River to confluence Missouri River.		X	X	X		X	X	X

FIGURE 9

INTERSTATE WATERS AND DESIGNATED USES

INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT
Republican River Basin								
Arikaree River--Kansas-Nebraska State line to confluence Republican River.		X	X	X		X	X	X
Beaver Creek--Kansas-Nebraska State line to confluence Republican River.		X	X	X		X	X	X
Enders Reservoir--Impounds waters of Frenchman River.		X	X	X	X	X	X	X
Frenchman River--Colorado-Nebraska State line to confluence Republican River, excluding Enders Reservoir.		X	X	X		X	X	X
Harlan County Reservoir--Impounds waters of Republican River.		X	X	X	X	X	X	X
North Fork Republican River--Colorado-Nebraska State line to confluence Republican River.		X	X	X		X	X	X

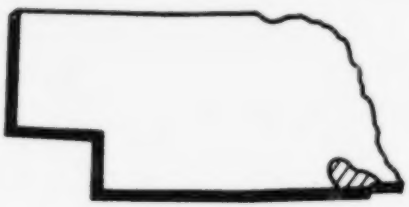
FIGURE 9 (cont'd.)

INTERSTATE WATERS AND DESIGNATED USES

INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT	
Republican River Basin (cont'd.)									
Prairie Dog Creek--Kansas-Nebraska State line to confluence Republican River.		X	X	X		X	X	X	
Republican River--Confluence North Fork Republican River to Nebraska-Kansas State line, excluding Harlan County and Swanson Reservoirs.		X	X	X		X	X	X	
Sappa Creek--Kansas-Nebraska State line to confluence Beaver Creek.		X	X	X		X	X	X	
South Fork Republican River--Kansas-Nebraska State line to confluence Republican River.		X	X	X		X	X	X	
Swanson Reservoir--Impounds waters of Republican River.		X	X	X	X	X	X	X	

FIGURE 10

INTERSTATE WATERS AND DESIGNATED USES



INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)									
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT	
South Fork Nemaha River Basin									
South Fork Nemaha River--Kansas-Nebraska State line to confluence Big Nemaha River.		X	X	X		X	X	X	

FIGURE 11

INTERSTATE WATERS AND DESIGNATED USES

INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT	
South Platte River Basin									
Kimball Reservoir--Impounds waters of Lodgepole Creek.		X	X	X	X	X	X	X	
Lodgepole Creek--Wyoming-Nebraska State line to Nebraska-Colorado State line, excluding Kimball Reservoir.		X	X	X		X	X	X	
South Platte River--Colorado-Nebraska State line to confluence Platte River.		X	X	X		X	X	X	

FIGURE 12

INTERSTATE WATERS AND DESIGNATED USES

INTERSTATE WATERS	DESIGNATED USES (PRESENT AND FUTURE)								
	DOMESTIC WATER SUPPLY	PROPAGATION OF FISH, WATERFOWL, FURBEARERS, AND AQUATIC AND SEMI-AQUATIC LIFE AND WILDLIFE	LIVESTOCK WATERING	INDUSTRIAL	FULL BODY CONTACT SPORTS	AESTHETIC VALUE	IRRIGATION	PARTIAL BODY CONTACT	
White River Basin									
White Clay Creek--Headwaters to Nebraska-South Dakota State line.	X	X	X	X		X	X	X	
White River--Headwaters to Crawford Water Intake.	X	X	X	X		X	X	X	
White River--Crawford Water Intake to Nebraska-South Dakota State line.		X	X	X		X	X	X	

WATER QUALITY CRITERIA

The protection of water quality and uses requires the establishment of numerical and narrative limits on pollutants which damage these uses. The water quality criteria in this section reflect the best scientific judgment available as to the water quality requirements for the assigned uses. Numerical criteria are used wherever it is reasonable to do so. However, narrative criteria are also necessary in some cases, particularly with respect to aesthetic considerations.

Some interstate waters have a higher quality than the minimum levels assigned for protection of water uses, and the standards seek to protect this higher quality as much as possible in the face of increasing social and economic development. Scientific knowledge about the exact water quality requirements for uses is limited; and by preventing degradation of high quality waters, the standards seek to assure optimum, not marginal, conditions to protect the uses associated with clean waters.

The water quality criteria for each use protected by the Nebraska standards are shown in Table 1, pages 21-22. In addition, the standards contain general narrative criteria, including a statement on controlling degradation of high quality waters. These general criteria are stated as follows:

> All surface waters shall meet general aesthetic standards and shall be capable of supporting desirable diversified aquatic life. These waters shall be free of substances attributable to discharges or wastes having materials that will form objectionable deposits, floating debris, oil scum and other matter producing objectionable color, odor, taste or turbidity--materials including radionuclides, in concentration or combinations which are toxic or which produce undesirable physiological responses in human, fish or other animal life or plants and substances and conditions or combinations thereof in concentrations which produce undesirable aquatic life.

Facilities for expediting mixing and dispersing all wastewater into receiving waters shall be provided when deemed necessary by the Nebraska Water Pollution Control Council* to maintain the quality of the receiving waters in accordance with applicable water quality criteria.

Waters whose existing quality is better than the established standards as of the date on which such standards become effective will be maintained at this high quality unless it has been affirmatively demonstrated to the State that a change is justifiable as a result of necessary economic or social development. Any industrial, public or private project or development which would constitute a new source of pollution or an increased source of pollution to high quality waters will be required to provide the necessary degree of waste treatment to maintain high water quality. In implementing this policy, the Secretary of the Interior** will be kept advised and will be provided with such information as he will need to discharge his responsibilities under the Federal Water Pollution Control Act, as amended.

The standards provide for the protection of many small interstate streams which are not covered by specific use designations and criteria. These streams are protected by the above narrative criteria.

*Effective July 1, 1971, Nebraska Environmental Control Council.

**Effective December 2, 1970, Administrator of Environmental Protection Agency.

STATE OF NEBRASKA WATER POLLUTION CONTROL COUNCIL*

WASTE WATER SHALL NOT DEGRADE THE RECEIVING WATERS BELOW THE FOLLOWING CRITERIA. THESE CRITERIA ARE APPLICABLE AT FLOWS EQUAL TO OR GREATER THAN THE LOWEST FLOW FOR SEVEN (7) CONSECUTIVE DAYS WHICH CAN BE EXPECTED TO OCCUR AT A FREQUENCY OF ONCE EVERY TEN YEARS.

PARAMETER / WATER USE	1 COLIFORMS GROUP ORGANISMS	2 TASTE & ODOR PRODUCING SUBSTANCES	3 SUSPENDED COLLOIDAL, OR SETTLEABLE SOLIDS	4 TOXIC AND DELETERIOUS SUBSTANCES
CLASS "A" DOMESTIC WATER SUPPLY	Coliform group and fecal coliform organisms shall not exceed a geometric mean of 10,000 total coliform organisms or 2,000 fecal coliform organisms per 100 milliliters. No more than 20% of samples shall exceed 20,000 total or 4,000 fecal coliform bacteria.	Concentration of substances shall be less than that amount which would degrade the water quality for the designated use. Phenols concentrations shall not exceed 0.001 mg/l.	None from waste water sources which will permit objectionable deposition or be deleterious for the designated uses. In no case shall turbidity caused by waste water impart more than a 10% increase in turbidity to the receiving water.	None alone or in combination with other substances or wastes in concentration of such nature so as to render the receiving water unsafe or unsuitable for the designated use. Raw water shall be of such quality that after treatment by coagulation, filtration, sedimentation, the water will meet Public Health Drinking Water Standards. Radiological limits shall be in accordance with the Radiological Health Regulations, State of Nebraska, 1st edition 1966, and as amended in its latest edition.
CLASS "B" FULL BODY CONTACT SPORTS	Shall not exceed a geometric mean of 200 fecal coliform organisms per 100 milliliters and shall not exceed 400 per 100 milliliters in more than 10% of the samples.	None in amounts which would be sufficient to interfere with designated use.	Same as WATER SUPPLY - 3 -	Same as WATER SUPPLY - 4 -
CLASS "C" Agricultural uses including irrigation & livestock watering Partial Body Contact Sports Growth & Propagation of fish, waterfowl, fur bearers, & other aquatic and semiaquatic life, and wildlife Industrial	Same as WATER SUPPLY - 1 -	Same as WATER SUPPLY - 2 - Shall not contain concentrations of substances which will render any undesirable taste to fish flesh, or in any other way make such fish flesh inedible.	Same as WATER SUPPLY - 3 -	Same as WATER SUPPLY - 4 - Plus ammonia nitrogen concentrations shall not exceed 1.4 mg/l in trout streams nor exceed 3.5 mg/l in warm water streams where the pH in these streams does not exceed a pH value of 8.3. If the pH of a stream exceeds 8.3, the undissociated ammonium hydroxide as nitrogen shall not exceed one-tenth mg/l in trout streams nor exceed 0.25 mg/l in warm water streams.[2] For irrigation use, the boron concentration shall not exceed 0.75 mg/l. For toxic materials not specified bioassay methods acceptable to Nebraska Water Pollution Control Council.*
INTERMITTENT Water Quality Criteria for Intermittent Streams[1]	Coliform group and fecal coliform organisms shall not exceed a geometric mean of 20,000 total coliform organisms or 4,000 fecal coliform organisms per 100 milliliters.	Same as Agricultural, Industrial & Other Beneficial Uses - 2 -	Suspended Solids shall not exceed 30 mg/l.	Same as Agricultural, Industrial & Other Beneficial Uses - 4 -

* Effective July 1, 1971, Nebraska Environmental Control Council.

1 See definition of intermittent stream on page 26.

2 See Appendix I.

The word "waters" or "receiving waters" shall replace the word "stream" or "streams" where applicable in the water quality criteria parameters.

QUALITY CRITERIA

TABLE # 1

For Temperatures:
Flows considered are for ice-free conditions.

5 TEMPERATURE	6 DISSOLVED OXYGEN	7 HYDROGEN ION	8 TOTAL DISSOLVED SOLIDS	9 RESIDUE OIL & FLOATING SUBSTANCE	10 AESTHETIC CONSIDERATIONS
The temperature of the receiving water shall not be increased by a total of more than 5° F from May through October and not more than a total of 10° F from November through April. Maximum rate of change limited to 2° F per hour.	Shall not be lower than 5 mg/l in warm waters and 6 mg/l in trout waters.	Hydrogen ion concentrations expressed as pH shall be maintained between 6.5 & 9.0 with a maximum total change of 1.0 pH unit from the value in the receiving stream.	A point source discharge shall not increase the total dissolved solids (TDS) concentration of a receiving water by more than 10% and in no case shall the total dissolved solids of a stream exceed 600 mg/l. Data regarding specific conductivity will be considered in lieu of TDS data. A point source discharge shall not increase the conductivity of the receiving water by more than 10% and in no case shall the conductivity exceed 900 micromhos per centimeter at 25° C.	No residue attributable to waste water or visible film of oil or globules of grease shall be present. Emulsified oil and grease shall be less than 15 mg/l.	No evidence of matter that creates nuisance conditions or is offensive to the senses of sight, touch, smell, or taste, including color.
Same as WATER SUPPLY - 5 -	Same as WATER SUPPLY - 6 -	Same as WATER SUPPLY - 7 -	Same as Agricultural, etc. - 8 -	Same as WATER SUPPLY - 9 -	Same as WATER SUPPLY - 10 -
Trout Waters[3] Allowable change, 5°, maximum limit 65° F. Warm Water Waters Allowable change 5° F May thru Oct.; 10° F Nov. thru April. Maximum limit 90° F. Maximum rate of change limited to 2° per hour. For Missouri River from South Dakota-Nebraska State line near Fort Randall Dam to Sioux City, Iowa, maximum temperature 85° F. Allowable change 4° F.	Same as WATER SUPPLY - 6 -	Same as WATER SUPPLY - 7 -	A point source discharge shall not increase the total dissolved solids concentration of a receiving stream by more than 20%. This value shall not exceed 100 mg/l, and in no case shall the total dissolved solids of a stream exceed 1500 mg/l. Data regarding specific conductivity will be considered in lieu of TDS data. A point source discharge shall not increase the conductivity of the recovery water by more than 20%. This value shall not exceed 150 micromhos/centimeter, and in no case shall the conductivity of the receiving waters exceed 2250 micromhos/centimeter at 25° C. For irrigation use the SAR value and conductivity shall not be greater than a C3-S2 class irrigation water as shown in Figure 25 of Agricultural Handbook 60.[4]	Same as WATER SUPPLY - 9 -	Same as WATER SUPPLY - 10 -
	Wastewater discharges shall not exceed 30 mg/l in B.O.D.	Same as WATER SUPPLY - 7 -		Same as WATER SUPPLY - 9 -	Same as WATER SUPPLY - 10 -

3 See Appendix II.

4 See Appendix III.

The method of water sample collection, sample preservation, analysis, and measurement to determine water quality and the accuracy of the results shall be in accordance with the latest edition of Standard Methods for the Examination of Water and Wastewater, or by appropriate regulations or procedures approved by the Nebraska Water Pollution Control Council.* Every effort shall be made to make the samples representative of the receiving waters after reasonable opportunity for mixing with the waste water.

IMPLEMENTATION PLAN

The "action" plan of the standards is the plan of implementation and enforcement. This plan sets forth the requirements for treatment and/or control of all conventional municipal and industrial waste discharges in the State which affect interstate waters, specifies the time within which this is to be accomplished, and contains programs for dealing with other water pollution control problems.

The Nebraska Water Quality Standards contain the following statement in regard to secondary treatment requirements:

> All municipal wastes shall receive at least secondary treatment plus such additional treatment as is required to maintain Water Quality Criteria, as set forth in these Standards. All other wastes shall receive an equivalent degree of treatment or control consistent with waste characteristics, uses and quality of receiving waters.
>
> The date for compliance with the requirements of these Standards for all municipal, industrial, and other wastes which discharge into intrastate and interstate waters of the State, except for those waste sources discharging directly into the Missouri River, shall be 1 January, 1972, with earlier compliance where necessary. The date for compliance with these Standards for all municipal, industrial, and other wastes discharging directly into the Missouri River shall be 31 December, 1975, with earlier compliance where necessary. All proposed construction of waste treatment facilities in the interim periods prior to the dates of compliance shall provide treatment consistent with the policies and objectives of these Standards.

Information on the requirements for any particular discharger may be obtained from the Nebraska Department of Environmental Control.

Other programs to control and abate pollution are developed in the standards with a plan of action as follows:

1. Combined Sewer Overflows are recognized as a source of objectionable pollutants in many of the older sewer systems. It is hoped that research will provide a solution by December 31, 1977. The Nebraska Fnvironmental Control Council, in the meantime, is to encourage the separation of storm and sanitary sewers and to disapprove any extension of combined systems.

2. Wastes From Vessels and Marinas are controlled by rules and regulations of the Nebraska Game and Parks Commission. Every vessel equipped with kitchen or toilet facilities shall handle and treat solid and liquid wastes in a manner that will prevent water pollution. No wastes or container of such wastes shall be placed, left, or discharged in or near any waters of the State.

3. Agricultural Wastes

   a. Cattle feedlots are distributed throughout the State with the highest concentration of lots in the eastern one-third of the State. Feedlot wastes will be effectively controlled by no later than December 31, 1972.

   b. Considerable progress has been made in soil conservation to prevent erosion. Approximately 18,000,000 acres of land have been properly treated out of a possible 47,443,000 acres that could possibly benefit from good soil conservation practices. The Nebraska Soil and Water Conservation Commission policy is to continue or even accelerate the cooperative Federal-State program to control runoff and silt to the streams of the State. The Nebraska Environmental Control Council will cooperate with the Nebraska Soil and Water Conservation Commission in developing a program to combat this form of pollution.

   c. Approximately 3,200,000 acres of land are irrigated in the State of Nebraska, primarily in the central and western portions of the State. Irrigation return flow affects water quality through increases in total dissolved solids, silt, nutrients, temperature, and in

some cases pesticides. A survey by the Nebraska Environmental Control Council and the Nebraska Department of Water Resources to inventory irrigation return flows in the State and identify those which are degrading water quality is scheduled for completion by December 31, 1972.

4. Sand and Gravel Extraction--The Nebraska Department of Environmental Control is currently working with the Nebraska Sand and Gravel Association and is in the process of developing guidelines to adequately control waste discharges from sand and gravel pumping operations. Waste discharges from these operations were scheduled to be effectively controlled by January 1, 1972.

5. Operation and Maintenance of Wastewater Treatment Facilities--Conscientious, skillful, and dedicated operation of a treatment plant is needed on a continuous basis to achieve the goal of water quality enhancement for Nebraska. Operator training is presently provided through a correspondence course and training programs administered by the Nebraska Water Pollution Control Association and the Nebraska Department of Environmental Control. This program includes a voluntary certification program. A visit will be made to each treatment plant by State Environmental Control Department personnel on at least an annual basis to determine the degree of treatment provided, the status of needed improvements, and to provide technical assistance to the operator. A formal report will be prepared and submitted to the controlling authority and the operator. Enforcement procedures will be initiated in cases where a plant is bypassed without authority or inadequately operated.

GLOSSARY OF TERMS

Advanced Waste Treatment--Refers to methods and processes that will remove more contaminants from wastewater than are usually removed in present-day conventional treatment plants. The processes may be physical, chemical, biological, or combinations of these. Examples of advanced waste treatment are carbon adsorption, coagulation, reverse osmosis, electrodialysis, and ion exchange.

Bacteria--The best indicator of the sanitary quality of water has been an estimate of the density of coliform bacteria. There are two classifications:

(1) Coliform or total coliform bacteria include a heterogeneous grouping of bacteria which are identified by bacteriological procedures to be gram-negative, non-spore-forming, rod-shaped organisms which will ferment lactose with gas formation within 48 hours at 35° C. in either an aerobic or facultative anaerobic environment. Since these bacteria are present in large numbers in fecal wastes, they have been a traditional bacteriological tool used to measure the occurrence and intensity of fecal contamination in stream pollution investigations.

(2) Fecal coliform bacteria are that portion of coliform population which are capable of lactose fermentation at an elevated temperature of 44.5° C. Unlike some strains of nonfecal members of the total coliform group, fecal coliforms have a specific high order of positive correlation with warm-blooded animal pollution, survive for shorter time in water and soil, and more closely correlate with survival patterns of enteric pathogenic bacteria.

Biochemical Oxygen Demand (BOD)--The BOD is the measure of the amount of oxygen necessary to satisfy the biochemical oxidation requirements of organic matter at the time the sample is collected. Unless otherwise specified, this term will mean the 5-day BOD incubated at 20° C. Waste discharges containing high levels of BOD reduce dissolved oxygen concentrations in the receiving waters.

Colloidal Substances--Minute clay or other substances which do not settle out without the use of a flocculant.

Disinfection--A method of reducing the pathogenic or objectionable microorganisms by means of chemicals or other acceptable means.

Dissolved Oxygen (DO)--This is a measure of the amount of free oxygen in the water.

Full Body Contact Sports--Includes uses of water such as swimming, water skiing and skin diving. Also called "Primary Contact Recreation."

Intermittent Stream--Any stream exhibiting a record of periodic zero flows; or, in terms of receiving waste, a stream whose design drought flow (7-day low flow recurring once every 10 years) is less than the design flow of the waste source; or, whenever the actual flow of the stream is less than the waste source discharge.

Interstate Waters--Under the Federal Water Pollution Control Act, interstate waters are defined as:

(1) rivers, lakes, and other waters which flow across or form a part of State or international boundaries;

(2) waters of the Great Lakes;

(3) coastal waters--whose scope has been defined to include ocean water seaward to the territorial limits and waters along the coastline (including inland streams) that are influenced by the rise and fall of the tide.

Intrastate Waters--Rivers, lakes, and other waters wholly within the State which do not flow across nor form a part of the boundaries of the State.

Membrane Filter (MF)--A technique of bacteriological analysis. This technique involves the running of a certain volume of water through a cellulose ester wafer which is then impregnated with growth media for bacteria.

Milligrams Per Liter (mg/l)--Milligrams of solute per liter of solution. Equivalent to parts per million assuming unit density.

"Most Probable Number" (MPN)-- A test of bacterial density expressed as a number of organisms per hundred milliliters. It is a number most likely to occur, using statistical methods, under the given circumstances or conditions of the test.

Partial Body Contact Sports--Also called "Secondary Contact Recreation." Includes such recreational uses as boating and fishing.

pH--The pH value indicates the relative intensity of acidity or alkalinity of water with the neutral point at 7.0.

Pollution--The introduction of substances of such character and in such quantity to a body of water that its natural quality is so altered as to impair its usefulness or render it offensive to the senses of sight, taste, or smell.

Primary Treatment--The removal of settleable and floatable materials from a waste water.

Secondary Treatment--A method of waste treatment beyond primary treatment where pollutants in solution or the colloidal state are biologically or chemically removed. The minimum treatment required under this method is removal of at least 85 percent of the BOD and suspended solids.

Settleable Solids--Substances such as erosional silt, organic detritus, plankton, and sand which, because of particle size or lack of water currents, settle to the bottom of a stream course (or a laboratory sample bottle).

Sewage--(1) The water supply of a community after it has been used and discharged into a sewer. (2) Wastewater from the sanitary conveniences of dwellings, business buildings, factories, and other institutions.

Sewage, Combined--A sewage containing both sanitary sewage and surface or storm water with or without industrial wastes.

Sewer, Combined--A sewer which carries both sanitary sewage and storm drainage. At times of heavy rainfall,

the capacity of combined sewers may be exceeded and sewers will overflow. The overflow will bypass the sewage treatment plant and the combined wastewaters will be discharged directly into streams without treatment of any kind. This is a problem in many older cities in the United States, and there are various programs to deal with it.

Sodium Adsorption Ratio (SAR)--This is an expression of the relative activity of sodium ions in exchange reaction with soil and is an index of sodium or alkali hazard to the soil. This ratio should be known especially for water used for irrigation. The SAR is calculated by the use of the following empirical equation:

$$SAR = NA^{+} \Big/ \sqrt{(Ca^{++} + Mg^{++}) / 2}$$

where NA^{+}, Ca^{++}, and Mg^{++} represent the concentrations in milliequivalents per liter of the respective ions.

Suspended Solids--Substances such as erosional silt, organic detritus, plankton, and sand which are held in suspension by water currents.

Temperature--A measure of the hotness or coldness of water. While temperature is affected by natural conditions, man has a significant effect by the construction and operation of dams and the discharge of cooling waters from industrial processes, particularly power generation.

Total Dissolved Solids--Solids which are present in solution.

Toxic Materials--These may include hundreds of compounds present in waters due to industrial wastes, runoff from farm lands where pesticides have been applied, and other causes which are harmful to human, plant, animal and aquatic life.

Warm- and Cold-Water Fish--Warm-water fish include black bass, sunfish, catfish, gar and other. Cold-water fish include salmon and trout, whitefish, miller's thumb and blackfish. The temperature factor determining distribution is set by adaptation of the eggs to warm or cold water.

FEDERAL AND STATE AGENCY ADDRESSES

State Agencies

Nebraska Department of Environmental Control
P. O. Box 94653, State House Station
Lincoln, Nebraska 68509

Nebraska Game and Parks Commission
2200 North 33rd Street, P.O. Box 30370
Lincoln, Nebraska 68503

Nebraska State Soil and Water
Conservation Commission
State Capitol Building
Lincoln, Nebraska 68509

Federal Agencies

Environmental Protection Agency
Washington, D.C. 20460

Environmental Protection Agency
Region VII
1735 Baltimore, Room 249
Kansas City, Missouri 64108

U.S. Department of the Interior
Geological Survey
Water Resources Division
Room 127 Nebraska Hall
901 North 17th Street
Lincoln, Nebraska 68508

INDEX OF INTERSTATE WATERS

*Interstate Waters	Uses Page
Arikaree River	14
Beaver Creek	14
Big Blue River	7
Box Butte Reservoir	11
Enders Reservoir	14
Frenchman River	14
Harlan County Reservoir	14
Hat Creek	8
Horse Creek	12
Keya Paha River	11
Kimball Reservoir	17
Lake McConaughy	12
Little Blue River	9
Lodgepole Creek	17
Missouri River	10
Niobrara River	11
North Fork Republican River	14

*General criteria, pages 19-20, apply to all waters. Specific criteria, pages 21-22, apply for individual use classifications.

Index of Interstate Waters (contd.)

*Interstate Waters	Uses Page
North Platte River	12
Platte River	13
Ponca Creek	10
Prairie Dog Creek	15
Republican River	15
Sappa Creek	15
South Fork Nemaha River	16
South Fork Republican River	15
South Platte River	17
Swanson Reservoir	15
White Clay Creek	18
White River	18

*General criteria, pages 19-20, apply to all waters. Specific criteria, pages 21-22, apply for individual use classifications.

APPENDIX I

Maximum Permissible Limit of Ammonia Expressed as N at Various pH Values

pH	Maximum Limit of Ammonia Expressed as Parts Per Million N	
	Trout Waters	Warm Waters
8.3	1.4	3.5
8.4	1.2	2.9
8.5	1.0	2.4
8.6	0.84	2.1
8.7	0.72	1.8
8.8	0.60	1.4
8.9	0.56	1.2
9.0	0.48	1.1

APPENDIX II

Designated Trout Streams

County	Stream
Antelope	East Branch Verdigre Creek
	South Branch Verdigre Creek
	Big Springs Creek
Box Butte	Niobrara River*
Brown	Fairfield Creek
	Plum Creek
	Long Pine Creek
Custer	Victoria Springs Creek
Dawes	Niobrara River above Box Butte*
	White River to Crawford Water Intake*
	Soldiers Creek
	Big Bordeaux Creek
	White Clay Creek*
	Little Bordeaux Creek
	Dead Horse Creek
	Chadron Creek
Dundy	Rock Creek including State Fish Hatchery
Holt	Middle Branch Verdigre's Creek
	North Branch Verdigre's Creek
	South Branch Verdigre's Creek
	Steele Creek
	Squaw Creek
	Louse Creek
	Redbird Creek
	Spring Creek
	Brush Creek
Hooker	North Fork Dismal River
	South Fork Dismal River
	Dismal River to State Highway 97
Keith	Whitetail Creek
	Lonergan Creek
	Otter Creek
	West Birdwood Creek

*Interstate

Designated Trout Streams (contd.)

County	Stream
Knox	North Branch Verdigre Creek
	Middle Verdigre Creek
	Pishel Creek
Lincoln	West Birdwood Creek
	North Fork Birdwood Creek
Loup	Gracie Creek
Sheridan	White Clay Creek*
	Larabee Creek
Sioux	Hat Creek to confluence Warbonnet Creek*
	East Hat
	West Hat
	Sowbelly Creek to confluence Warbonnet Creek
	Monroe Creek to confluence Warbonnet Creek
	Niobrara River*
	White River*
	Soldiers Creek

*Interstate

APPENDIX III

AGRICULTURE HANDBOOK 60, U. S. DEPT. OF AGRICULTURE

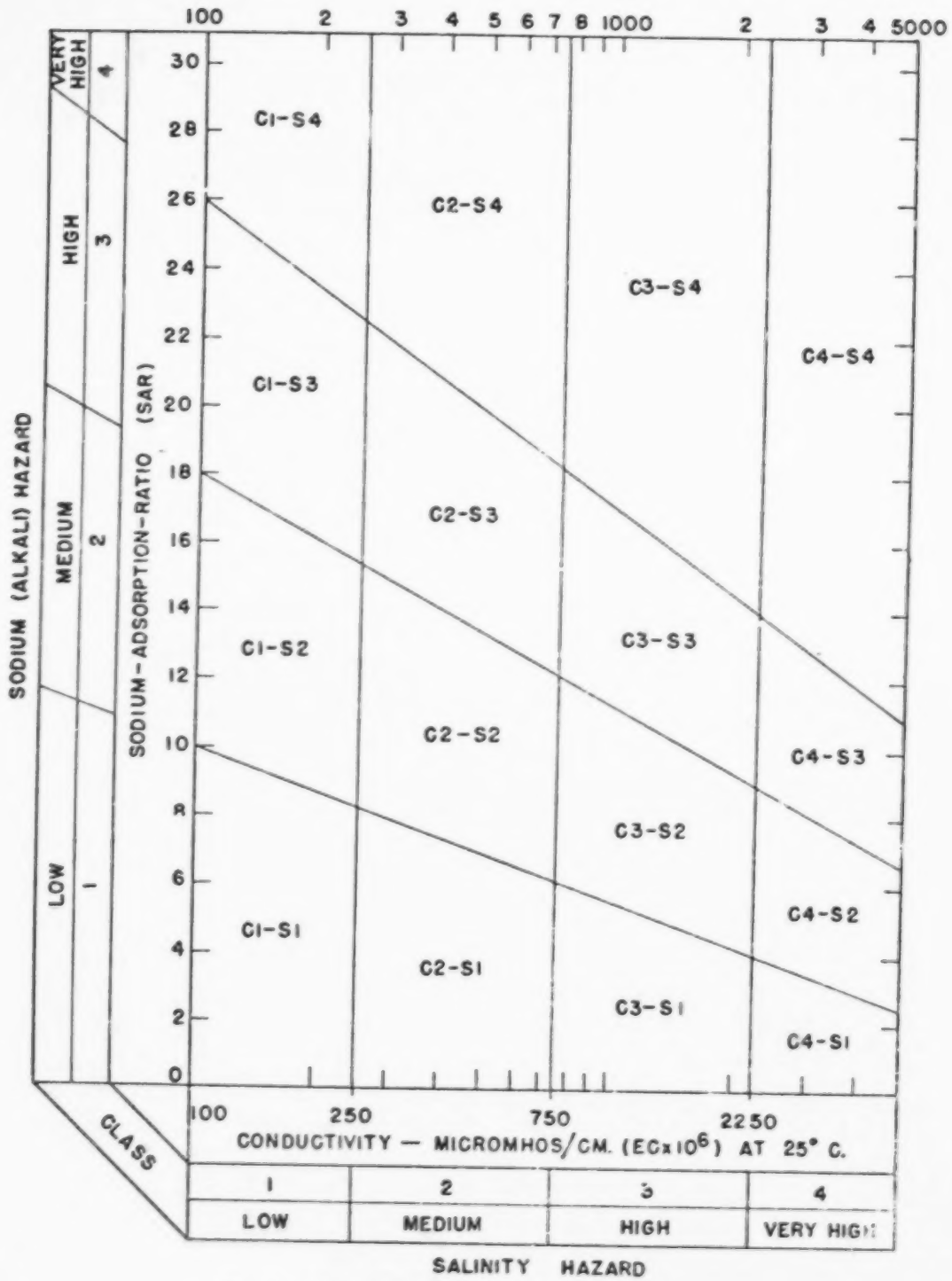


FIGURE 25.—Diagram for the classification of irrigation waters.